Caribou 1967

Forest Insect Conditions on the

Caribou National Forest

This report is an evaluation of current forest insect problems on the Caribou National Forest in 1967. Material for this report was compiled from previous evaluation reports, from aerial survey maps and data, and from special on-the-ground evaluation surveys.

The most important forest insect problems on the Forest in 1967 were the mountain pine beetle in lodgepole pine and a budworm complex--the spruce budworm and black-headed budworm. Briefly, tree killing by the mountain pine beetle, as recorded during the 1967 aerial survey (1966 attacks), increased significantly over that recorded in 1966 (1965 attacks). Infestations have become more intense in some areas and have extended themselves in others. In 1968 (1967 attacks) the present high level of tree killing will be maintained but biological conditions indicate a decreasing trend thereafter. The spruce budworm was reported for the first time feeding on Douglas-fir and subalpine fir in one small area in the southern part of the Forest. Associated with the spruce budworm was another defoliator, the black-headed budworm, but this combined activity was not rious enough t b of immediate concern. Th nd o h r inf s ion centers are shown on the Forest's copy of the aerial survey map mailed earlier. A more detailed discussion of these insect problems follows:

Mountain pine beetle, Dendroctonus ponderosae

The current mountain pine beetle epidemic had its beginning in 1960 when an estimated 500 lodgepole pine were attacked and killed in Clear Creek near the south end of the Forest. A three to fourfold increase occurred the following year when an estimated 1500 to 2000 mountain pine beetle killed lodgepole pine were recorded in Pritchard Creek, Tincup Creek, Diamond Flat, Eagle Creek, Clear Creek and Robinson Creek. Since then the beetle has continued to exhaust these stands from within and extend its boundaries to include most of the susceptible lodgepole stands on the Forest. Today, according to aerial survey data, there are an estimated 40 to 50,000 red-topped lodgepole (1966 attacks) on the entire Forest. It is likely that as many newly attacked lodgepole (1967 attacks) exist on the Forest at this time. Irrespective of this high rate of tree killing and apparent static trend, however, the infestation on the Forest as a whole, appears to be weakening and should exhibit a modest decline in 1968.

Aerial observers recorded an almost twofold increase in the number of recent faders (1966 attacks) over that recorded last year (1965 attacks). Mountain pine beetle caused mortality was so extensive that it is impractical to list all of the infestations in this report. However, major areas where increased tree killing prevailed were in most of the drainages bordering Cascade Reservoir, in McCoy and Tincup Creeks, in Diamond Flat and Terrace Canyon, at the head of the South Fork of Rock Creek, in the upper tributaries of Crow Creek, near Green Basin, and in Upper Gravel

Creek to name a few. The only noticeable decline of any significance was in the bottom of Robinson Creek on the Caribou-Bridger border.

Because of the extensive nature of the infestation, the patchy timber, and the short, broken terrain, it was physically impossible to visit, much less evaluate, a large share of the infested areas. Firsthand evaluations were limited to the largest, more serious infestations.

Biological evaluations were made by entomologists Bruce Baker, Kendall Lister and Douglas Parker during the last week of October, 1967. In performing these evaluations less emphasis was placed on brood counts and more reliance placed on attack ratios as one index of population trend. In the qualitative sense, brood inspection is necessary, however, for it permits us to record relative brood densities; and to observe their various life stages, their apparent physiological condition, and the presence and relative abundance of parasites, predators and associated beetles. Additional extrinsic factors like stand composition, host depletion, the age of the infestation, and most important, the availability of susceptible host material, were recorded and considered in the final evaluation. Notwithstanding, these data were then tempered with empirical judgement based on past experience. A resume of quantitative data taken during the evaluation period follows:

Area	Attack Ratio 1966	Attack Ratio 1967	Average Fall Brood Density/sq. ft.	Trend*
Pritchard Cr.	1	1.1	95.2	Decreasing
Currant Cr.	1	1.5	104.0	Decreasing
Bald Mtn.	3	1	104.0	Decreasing
Upper Stump Cr.	1	1.2	No Sample	
Lower Stump Cr.	1	1.6	196.4	Increasing
Terrace Canyon	1	1.2	113.2	Decreasing
Crow Cr.	1	1.7	256.4	Increasing

* Predictions based on brood sequential sampling tables prepared by Intermountain Experiment Station.

With only one exception, these data show a static to slight increase in the number of 1967 attacks over that recorded in 1966. In several instances, however, these attack ratios were based on only a few trees, for in some areas, both new and old attacks were difficult to find, even after several hours search.

The single most serious infestation still persists in Diamond Flat, Terrace Canyon, and Stump Creek. Here the infestation has maintained a high level of tree killing and has extended its boundaries into the upper reaches of the smaller tributaries--Boulder Creek and the North Fork of Stump Creek. Although the current attack ratio shows that there will be a slight increase in the number of redtops (1967 attacks) in summer of 1968, there is reason to suspect a significant weakening of the entire population level. This may not be evident during the 1968 aerial survey, but a noticeable reduction in the number of trees killed should be apparent by 1969. In most of these areas, killing of large tree groups has decreased, most of the attacks are in the smaller diameter trees, and the incidence of strip attacks and pitchouts

have materially increased. Although this area has experienced a relatively high rate of tree killing for several consecutive years, many lodgepole of susceptible age and size still remain. We hope to obtain a qualitative estimate of stand structure in this uncontrolled area once we are sure that the beetle has passed through.

A high level of tree killing will continue in Crow Creek and its upper tributaries. Most of these infestations are in mixed stands but biological conditions are such that a high rate of tree killing will continue for at least another year. Predictions beyond this time are uncertain.

The infestation in Robinson Creek on the Bridger National Forest has declined, primarily due to host depletion, but that portion of the infestation in Upper Giraffe Creek on the Caribou National Forest has increased over that recorded last year. These scattered stands of fringe type lodgepole suffer the heaviest damage and it is likely that host depletion will be a primary factor in reducing this infestation to a lower level in late 1968.

Because of the scattered nature of the various infestations, and the lack of firsthand evaluations, individual predictions as to the status and trend of each individual infestation is impossible. Instead, only gross generalizations based on many of the aforesaid biological factors combined with entomological experience can be made. There is no doubt, that in some instances, individual infestations or groups of infestations will materially increase, resulting in additional tree killing, but forest-wide, the infestation level will remain static--meaning as many trees were attacked in the fall of 1967 as were attacked in 1966--with a probable decrease in the overall attack ratio occurring in 1968. Under these conditions, control, other than by accelerated logging is not recommended.

A budworm complex, Acleris variana and Choristoneura occidentalis 1/

During the annual aerial detection survey, observers reported what appeared to be defoliated Douglas-fir and subalpine fir in Joe's Gap, northeast of Montpelier, Idaho. Defoliation was mapped in a 100-acre area from the Forest boundary along the south side of Joe's Gap to the top of the ridge south of Fox Spring. Followup ground surveys by Entomologist Douglas Parker and Forestry Aide Bill Dryden on August 7, recorded additional defoliation of Douglas-fir and subalpine fir along the lower Home Canyon road and the Spur road leading to the top of the ridge above Joe's Gap. Defoliation ranged from moderate on subalpine fir on the ridge top (8,000 ft.) to very light on Douglas-fir in the lower reaches of the Gap. The insect(s) responsible for this damage had completed their feeding and were in the pupal stange. Pupae of what was thought to be two different species were collected and brought to the Ogden laboratory for rearing. Shortly thereafter, the newly emerged adults were mailed to the National Museum in Washington, D. C., where they were identified as the spruce budworm, Choristoneura fumiferana 2/ and the black-headed budworm, Acleris variana. This is the first known

1/ Formerly listed as Choristoneura fumiferana, the spruce budworm.

2/ Now listed as C. occidentalis.

occurrence of the spruce budworm on the Caribou National Forest and the second record of the Black-headed budworm (The first was from an incidental collection made from subalpine fir in Della Basin, August, 1965).

At the present time, this infestation is of light intensity and has not caused concernful damage to the host trees. For this reason and because of the scattered nature of the timber in this area, it does not pose a threat to surrounding stands. This and other nearby areas will be closely watched for subsequent activity by either of these insects in 1968.

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